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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------------------------------------------------|-------------|----------------------|---------------------|------------------|
| 10/806,792 | 03/23/2004 | Steven L. Edwards | 2196-1A (FJ-99-41A) | 4428 |
| 40256 | 7590 | 08/02/2005 | EXAMINER | |
| FERRELLS, PLLC P. O. BOX 312 CLIFTON, VA 20124-1706 | | | HUG, ERIC J | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1731 | |
| DATE MAILED: 08/02/2005 | | | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|-----------------|----------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/806,792 | EDWARDS ET AL. | |
| | Examiner | Art Unit | |
| | Eric Hug | 1731 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 March 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 80-94 and 206-210 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 80-91 and 206-210 is/are allowed.
- 6) ☐ Claim(s) 92-94 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 92-94 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al (US 6,436,234) in view of Hollenberg et al (US 6,273,996).

Chen discloses among Examples 1-12 some sheets which have springback between the claimed 0.4-0.8 (see Table in middle of column 39). Calculations for the internal bond strength as determined from the geometric mean tensile (GMT) and caliper (obtained from density and basis weight) show that none of these examples have an internal bond strength of 140 g/in/mil or greater. The highest internal bond strength value is about 100 g/in/mil.

Hollenberg discloses high density absorbent webs having high wet resiliency. The webs are similar to those made by Chen, except that they have been compressed to obtain a denser sheet. Note that in column 1, lines 54-67, Hollenberg discusses the teachings of Chen (ser. no. 08/310,186; US 6,436,234 is a child application of 08/310,186). Hollenberg then goes on to say in column 2, lines 1-15, that the materials of Chen can be compressed to provide high density materials that retain their absorbent properties. Among these properties is the wet resiliency or springback taught by Chen. Table 2 of Hollenberg (column 11) show examples of sheets before and after compression, of which the caliper, dry (as is) MD tensile, and dry CD tensile have been measured. For the first calendered sheet on the list, the caliper is 4.07 (mils), the as is MD

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tensile is 6.85 (kg), and the as is CD tensile is 5.87 (kg). Using these values, the internal bond strength of this sheet is calculated below using the GMT or geometric mean tensile:

$$\text{GMT} = \text{square root (MD x CD)} = \text{square root (6.85 x 5.87)} = 6.34 \text{ (kg)}$$

On a 3 in. sample, this is $6.34/3$ or approx. $2.11 \text{ kg/in} = 2110 \text{ g/in}$.

Caliper is 4.07 mils.

Internal bond strength = $2110/4.07$ or about 515 g/in/mil .

Thus, it is clear that from the teachings of Hollenberg that the compressed sheets will have internal bond strengths much larger than the claimed value of 140 g/in/mil . Hollenberg does not expressly disclose the springback of the densified sheets.

In summary, Chen discloses the claimed springback but not the claimed internal bond strength, while Hollenberg discloses the claimed internal bond strength but not the claimed springback. However, it would have been obvious to one skilled in the art based on the teachings of Hollenberg that one can compress the sheets of Chen to obtain sheets having a much higher internal bond strength while maintaining the absorbent properties, thereby providing compressed sheets that have the same springback as undensified sheets. Since Chen teaches sheets having springback within the claimed range of 0.4 to 0.8, it also would have been obvious to one skilled in the art to densify the sheets of Chen as taught by Hollenberg to obtain sheets having the same springback and inherently having an internal bond strength much greater than 140 g/in/mil .

Allowable Subject Matter

Claims 80-91 and 206-210 are allowed.

The following is an examiner's statement of reasons for allowance:

Claims 80-87 are allowed, because the prior art does not disclose or suggest a fibrous sheet that has a wet springback ratio of at least 0.6 and void volume fraction from 0.55 to 0.85, wherein the sheet further has a hydraulic diameter from 3×10^{-6} to 8×10^{-5} ft which value depends on the void volume fraction according to provisos (a) and (b).

Claims 88-91 are allowed, because the prior art does not disclose or suggest an absorbent cellulosic sheet comprising recycle fiber, and having a wet springback ratio of at least 0.6 and void volume fraction from 0.55 to 0.70, wherein the sheet further has a hydraulic diameter from 4×10^{-6} to 5×10^{-5} ft.

Claims 206-210 are allowed, because the prior art does not disclose or suggest an absorbent cellulosic sheet that exhibits a wet springback ratio of at least 0.6, wherein the sheet further exhibits a characteristic Reynolds Number (Re) flow less than 1 and a dimensionless throughdrying coefficient $(2 + 2/Re)$ from about 4-10.

The prior art is silent to sheets with the above combinations of properties having values within the claimed ranges, or having values which obviate the claimed ranges.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kershaw (US 2004/0055694) discloses creped webs having high void volume and a wet springback ratio exceeding 0.7.

Chen et al (US 2003/0135181) discloses a throughdried cellulosic fibrous web having a wet springback ratio greater than 0.6 and a void volume fraction greater than 0.5.

Chen et al (US 6,808,790) discloses an absorbent web having a wet springback ratio greater than 0.8 and a mean volume-weighted pore length greater than 550 microns.

Chen et al (US 5,990,377) discloses an absorbent web having a wet springback ratio greater than 0.6.

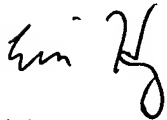
Turi et al (US 5,895,380) discloses an absorbent cellulose product having a hydraulic diameter of 0.5 mils (about 4×10^{-5} ft).

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric Hug whose telephone number is 571 272-1192. The examiner can normally be reached on Monday through Friday, 10:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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